

Successful Methods

Construction • Road Making • Engineering • Industrial • Mining



Vol 4

October 1922

No 10

Real Power Steer

The Thew Power Steer is real *power* steer. Many devices have been put on Continuous Tread trucks under this name but in every case it has been necessary to get down and hook up chains, levers, hose, etc. This is not necessary with the Thew.

Just a tap on a lever right at the operator's foot and everything is set. When he wants to turn a corner a slight swing of the turntable does it. The rest is automatic. The Thew doesn't have to be steered on the straight-away. Correct design and construction have eliminated this nuisance. The cambered treads cannot dig in or damage the pavement when turning.

The Thew continuous tread truck has two speeds—one for traveling between jobs at a reasonable rate and the other for hard pulling where more power is needed. The semi-flexible construction combines the best features of the full flexible and rigid types while avoiding the evils common to both. The result is a level house and flat traction when the going is rough.

Of course, the individual treads are of heat treated cast steel. Thew was the first to use these, too. They are connected with wide hinges but at the same time are open between for better traction. Double sprockets drive the treads and together with the double sets of idler rollers, distribute the shovel weight better and eliminate the common evil of climbing out of the treads. You can dig over either end of a Thew truck. The treads don't project any farther than traction wheels.

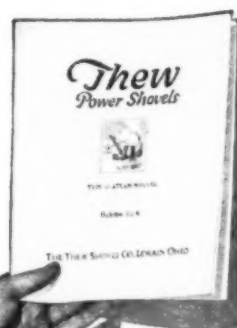
This is only part of the story. Satisfy yourself on Thew superiority by writing for a new bulletin.

THE THEW SHOVEL COMPANY

LORAIN, OHIO



Thew Power Shovels



yours



Successful Methods

A Magazine of Construction Service

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No. 10

The Carry Over

CONCERNS doing business in every commodity that is bought and sold study the trade statistics of their line as the farmer does the sky at haying time. One item on which they always keep close tab is the carry-over. In cotton, wheat, iron ore and a hundred other commodities prices are greatly affected at times by changes in the carry-over.

Very few contractors consider the volume of work carried over from one season to the next in fixing their own business plans and policies. The construction industry will be so seriously affected by this factor of unfinished work carried over from this year to next, however, that no contractor can afford to overlook it in his plans for 1923.

The amount of construction work that will be unfinished when cold weather comes this year will evidently exceed all previous figures. Many jobs that ordinarily would have been completed have been held up as a result of the strikes. A vast total of work that has been let since the strikes began cannot even be started until next season.

There is no way to get even an approximate estimate of the jobs that have been delayed, or stopped after they had been started. This situation is not as bad in some sections as in others. No part of the country has escaped, however, and in some localities construction work is seriously held up on account of inability to get materials.

It would be possible to get at a fairly exact total of the amounts involved in jobs let recently that cannot be started until spring. Some idea of what is involved may be had from the following:

One state has let over 160 miles of hard-surface road contracts on which little or no work can be done this year. The total of new contracts for hard-surface roads in the whole country that are in the same fix would probably reach 450 miles. The same situation applies in the building field. There also is known to be a vast amount of small work and maintenance that will have to wait until next year. Besides, the present outlook is for a program of new construction in 1923 which will exceed the great total of contracts let this year.

Any contractor who figures on quick deliveries next spring is simply laying a bet at long odds. Concerns that do business on a business basis cannot afford to gamble. It will pay them to get busy now so as to insure their supplies of materials and equipment. There certainly seems now to be no possibility of

lower prices next year, with all signs pointing to a rising scale. So buying now for delivery next spring appears to be a very safe procedure.

Road Maintenance by Contract?

SOME of the old timers who have been all through the asphalt paving experiences of the past may consider this a foolish question to bring up. But is it? Present conditions in highway maintenance are different from those which made the maintenance clauses in the old-fashioned asphalt contracts unsatisfactory to both the owner and the contractor.

Whether the time has arrived to consider road maintenance by contract is open to question. In some states, and in parts of all states, this time may never come. The expenditures and organization already involved in the proper upkeep of roads is enormous in several states. In some cases it exceeds the entire new construction program of a few years ago in these states. The money and organization required will grow rapidly with the increased mileage of improved road surfaces, and with the demand for better upkeep of natural surfaces. It is, therefore, worth while to give serious thought to what course it will be best to follow.

Maintenance work is an entirely different proposition from new construction. There are so many uncertain factors in maintenance, as compared with construction, that contracts for the former taken on a fixed basis would be a gamble. The methods required in handling maintenance may also be considered as a bar to contracting such work.

At least one large railroad has found for years that it gains by contracting its track maintenance. There are other cases where maintenance work is done by contract satisfactorily to all concerned. These experiences make it worth while for highway engineers to look into their maintenance costs to be sure they can do such work cheaper than it could be done by contract.

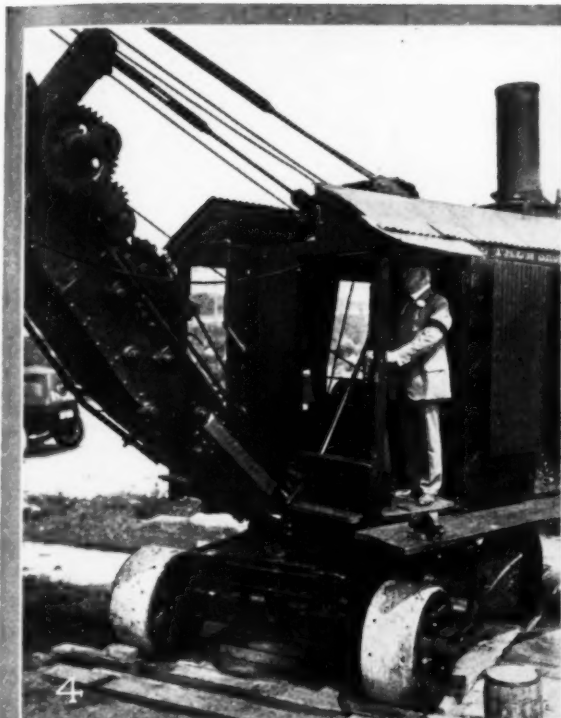
Certainly there would be little or no risk in contracting the production of local materials and the hauling of all materials. In fact, this already is being done to a limited extent. Out of this practice could easily come a policy of contracting all except certain special kinds of maintenance work. At any rate, the problem deserves an analysis without a preconceived conviction that contracting of maintenance is impracticable.

Variety in the Home



- 1—This concrete cabin in Cincinnati, Ohio, was built with mud forms. © International.
 2—Homes of this sort require little or no aid from the construction industry. This is a tourists' camp on the banks of the Potomac in Washington. © P & A Photos.
 3—A porcelain home in the City of Meissen, Germany, which is the center of the porcelain industry. Even the fence is built of porcelain. © P & A Photos.

Seems to Be in Demand



- 4—President Fiske of the Metropolitan Life Insurance Company operating the shovel which began work on the first of the fifty \$9-a-room apartment houses which are being built in New York City by his company. © *Central News*.
- 5—This photograph seems to refute the proverb that "a house divided against itself cannot stand." This house, however, was put together again when the moving operation which made the division necessary was completed. It is in Evanston, Ill. © *P & A Photos*.
- 6—One of the squares of the rebuilt village of Ypres. These houses are to be rented for 30 francs a month. © *Keystone*.

BIG ROADBUILDING PLANT IS MOUNTED ON WHEELS

Iowa Contractor Refuses to Let Size of His Outfit Interfere With Its Mobility

By J. W. EICHINGER,
Bulletin Editor, Iowa State Highway Commission.

THE well-known term "rolling stock" can be applied to all of the roadbuilding equipment used by C. F. Lytle on a highway job in Woodbury County, Iowa. All of his plant from mixer to quarters for his men is mounted on wheels.

When it becomes necessary or expedient to move his central proportioning and mixing plant from one point to another the removal of a comparatively few bolts in the framework stabilizing his mixer equipment makes it possible for him to hitch a freight engine, truck or locomotive crane to the freight car on which this equipment is mounted and move it wherever he wishes.



THIS VIEW OF THE BIG MIXER SHOWS THE TWO CEMENT CHUTES FED FROM CARS ON EITHER SIDE.

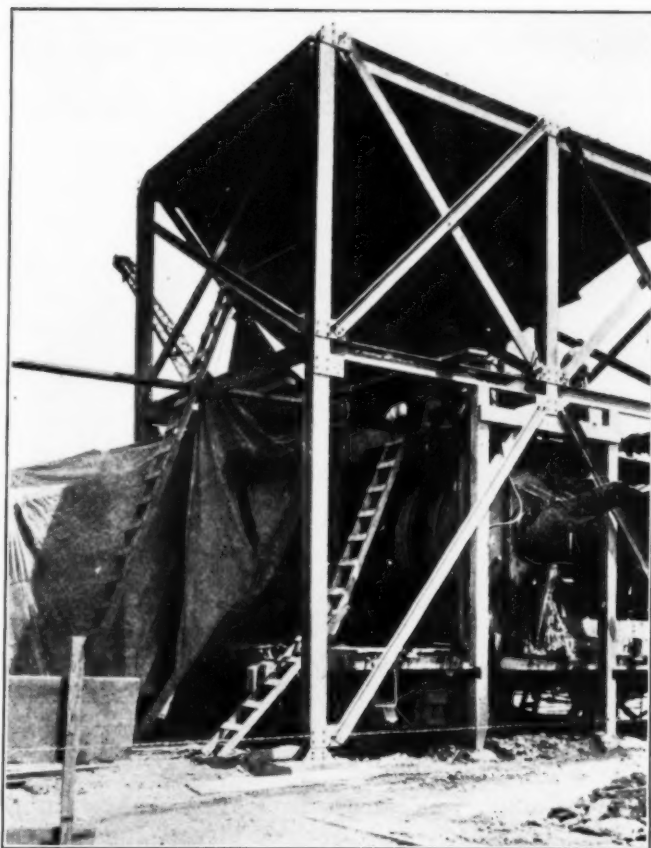
Two palace horsecars are turned respectively into a kitchen and a dining room providing quarters for 75 men to be seated comfortably at one time. These can be hooked on to the mixer car, and with a flat car or two carrying miscellaneous equipment the train is complete. Twenty road trucks equipped with automatic hoists and pneumatic tires comprise the equipment for hauling the concrete batch from the mixer to the road be-

ing built. A 20-ton locomotive crane is used for switching the various cars comprising the equipment, for unloading material cars and also for charging the sand and gravel hoppers for the mixer.



LAYING THE CONCRETE—A FINISHING MACHINE IS USED.

When Mr. Lytle found that he had contracts for 14 miles of paving in Woodbury county at three widely separated points, all of them on railway lines, and two of them of rather short mileage, he determined to so design his equipment that he would lose as little time as possible in moving from one project to another. He purchased a flat car and mounted on it a mixer with a capacity of 56 cu. ft. per batch. The mixer is driven by a gas engine mounted on the same flat car and connected with the mixer by a belt drive. Hoppers above the mixer are used for charging the gravel and sand bins. The measuring boxes and their supports are all of steel, designed and fabricated so that the parts which connect with the

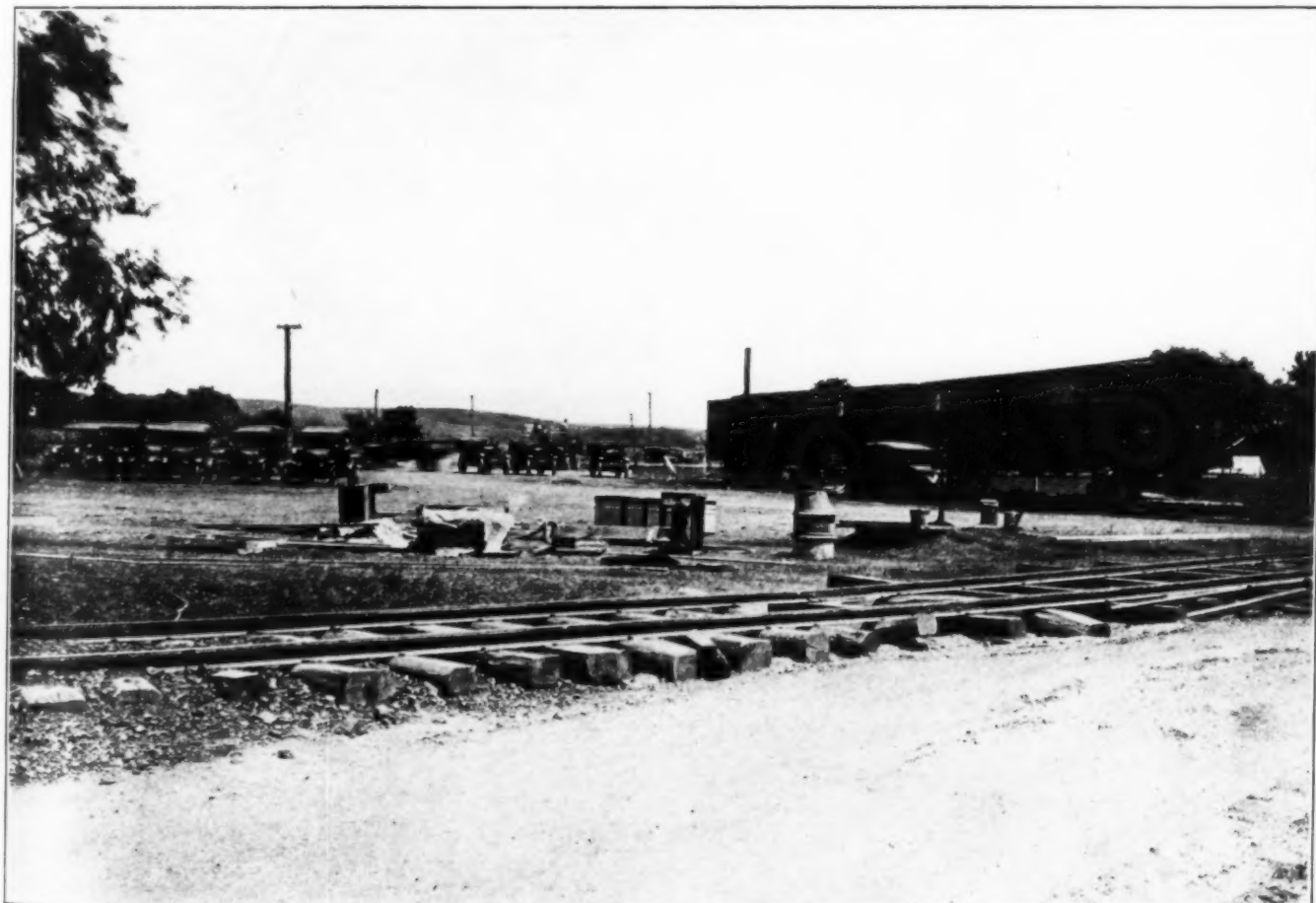


THE BIG MIXER WHICH DEVOURS 14 BAGS OF CEMENT EVERY TIME IT IS CHARGED

ground foundation to stabilize the mixer outfit can be removed in a few moments' time, leaving the flat car free to be moved at will.

The twenty road trucks represent a small fortune in themselves. They are of the latest type and are kept in the best mechanical condition by a force of repair men working in a fully equipped garage repair shop at the mixing plant site. Whenever a truck meets with trouble a special repair service truck goes to its aid.

Daily reports to the State Highway Commission show that this equipment through a period of 26 working days on one of these projects average 850 ft. per day of 18-ft. concrete 8 in. thick. This is an average of 2,454 sq. yd. of concrete slab.



THE MEN ON THE JOB LIVE IN THESE CARS, FORMERLY KNOWN AS "PALACE HORSE CARS"

BUILDING A BASEBALL PARK

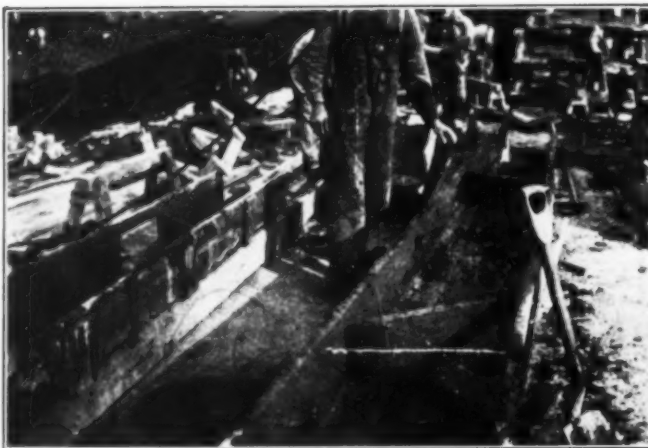
Contractors Use Novel Methods in Chuting Concrete for Grandstand of Yankees' New Field

By ROBERT S. ARTHUR.

THE new home, or rather reservation, of the New York American baseball team, a park which will seat a mere handful of 82,000 fans, is being pushed to completion in true Yankee style by the White Construction Co., which is using up-to-date methods and ideas.

The site, which includes about 10 acres, is bounded on the north and south by 157th and 161st Streets and on the east and west by River Avenue and Doughty Street. The grandstand, which runs nearly around the circle, leaving comparatively little space for the bleachers, is a 2-story with mezzanine steel structure with reinforced decks or floors.

The inclined deck readily lends itself to the pouring

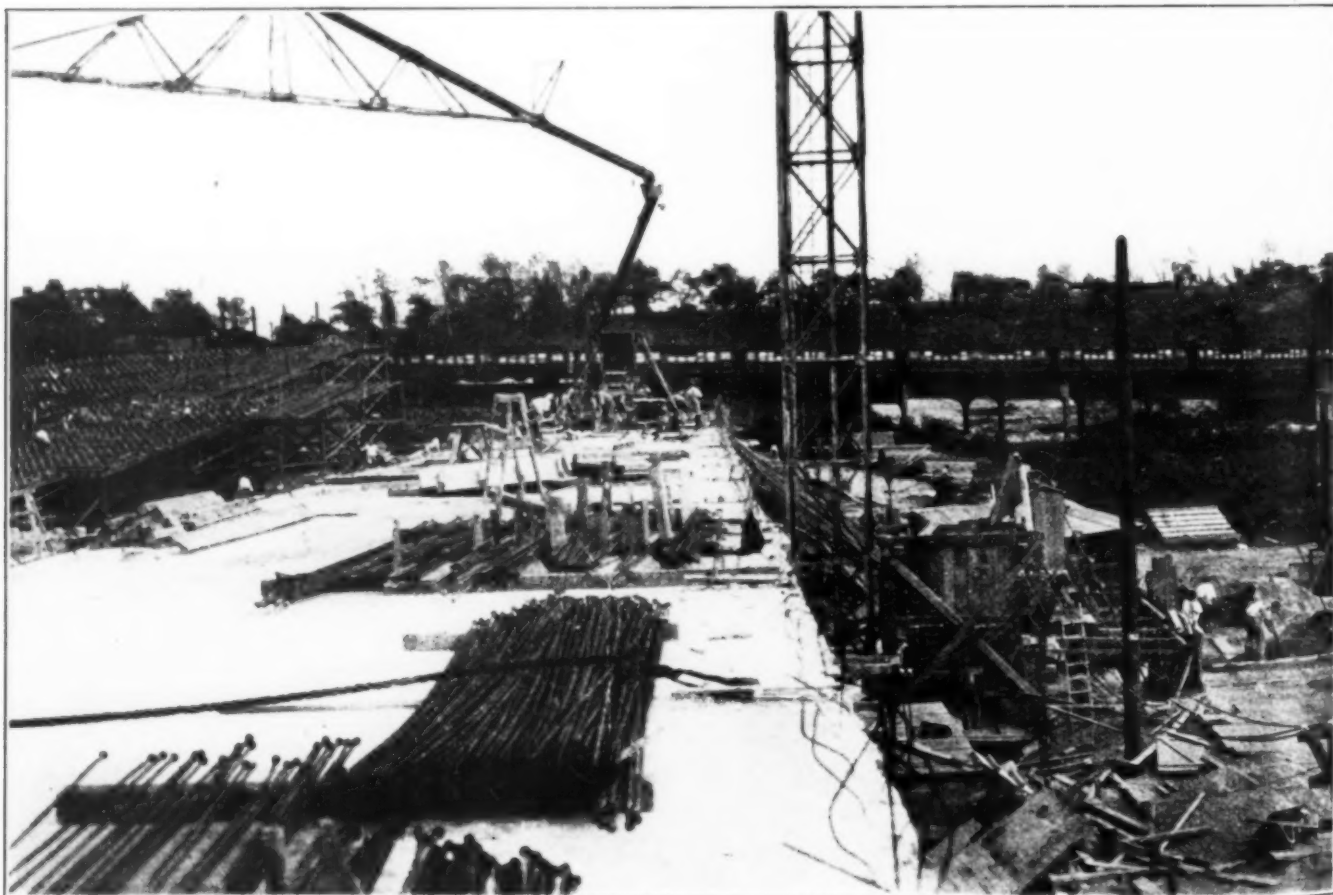


ONE OF THE WOOD TROUGHS USED FOR DIVERTING THE CONCRETE.

of concrete and to this advantage the contractors were not blind. A system of wood troughs laid down the slope of the deck act as laterals, which are fed from a main line of wooden troughs. This main line is filled from a boom and bucket plant having a radius of 150 ft. A maximum of 300 ft. is made with this system. For diverting the flow of concrete from the main line into the laterals, slots were cut in the sides of

the trough, and by opening these a partition is formed which diverts the flow through the opening into the lateral desired. The slope of the deck is sufficient to allow the concrete to flow by gravity.

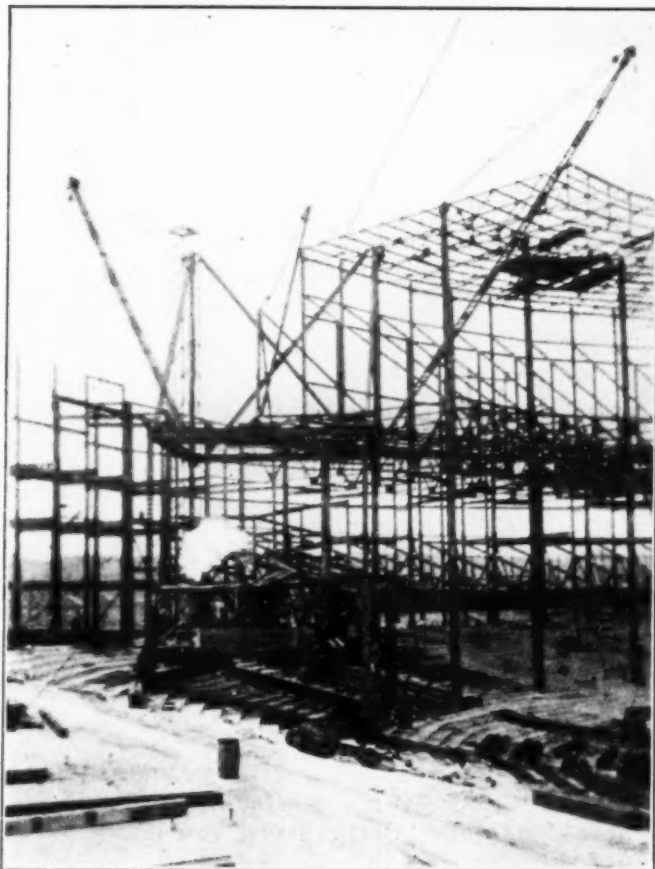
Four mixing plants, each equipped with a 1½-yd.



ONE OF THE FOUR CONCRETE PLANTS

mixer and elevator for stone, are used. The concrete is delivered to a floor hopper and then into the wooden troughs as described. Three hundred yards in 8 hours is the record day's run from one plant. A minimum of men is required in the placing of the concrete. The pitch of the deck (22 ft. in 135 ft.) which makes this method possible would hamper the ordinary chuting method considerably. After pouring, the riser forms are removed in about 3 hours and the steps finished.

One of the illustrations shows a device used on the work to facilitate the bending of the deck reinforcing which consists of mats of 3/16-in. rods. A mat is placed on a horizontal frame and held in place by a 2-in. plank which may be raised and low-



THE TRAVELER WHICH IS ERECTING THE STEEL WORK.

ered and is clamped down when holding the mesh. On each side are channel irons hinged and fitted with handles at each end. Two men bend the mesh upward on one side and downward on the other, which conforms to the steps.

For erecting the steel work a traveler with a special mounting on account of the pitch of the deck as shown in the illustration is used. Two large derricks with 65-ft. booms and a smaller one handle all the steel, the traveler starting at one end and moving around on rails. The steel is received on motor trucks.

The Osborne Engineering Co. of Cleveland is in charge of the design and construction. White construction Co. is the general contractor. A. C. Beck is superintendent.



THIS PHOTOGRAPH SHOWS THE METHOD USED IN BENDING THE REINFORCING MESH.

CRAWLING UP A MOUNTAIN

Steam Shovel Climbs to Lofty Perch Under Its Own Power

A STEAM shovel often has to do more than work. It first has to get to the place where the work is to be done. The Sun Sand Company of Thayer, W. Va., has its diggings high on a mountainside above the town and gets its material down by means of an inclined railway, which is shown in the lower photograph. This route was of course impracticable for the steam-shovel to follow.

The shovel, which was mounted on continuous tread traction, made its way up to the sand pits by a roundabout road about nine miles in length. It made the entire climb up the mountainside under its own power, had to dig its own roadway in many places, and forded several streams where the bridges were not strong enough to hold a steam shovel. The inhabitants of the region turned out en masse to watch the shovel make its climb and on more than one occasion were perfectly sure that the ponderous piece of equipment was stuck and



THE SHOVEL AT WORK AFTER ITS ARDUOUS JOURNEY UP THE MOUNTAIN.

would have to be hauled out. But each time the shovel runner fooled them by working his way out without help. In some places grades as high as 40 per cent were negotiated.

The inhabitants got something more than a holiday out of the coming of the shovel. In one place where the roadbed was not satisfactory, the shovel runner dug a new road reducing the grade somewhat. Since then the people in the vicinity have abandoned the old road

and have used the one dug by the shovel.

The shovel runner who took the machine up the mountain attributed his success in negotiating the grades and extricating the shovel from tight places to the efficient working of the continuous tread with which it was equipped. Like the tanks used in the war, the shovel dipped in and out of gullies and holes without difficulty and made possible its excellent performance.



THIS PHOTOGRAPH SHOWS WHY THE SHOVEL HAD TO TAKE A NINE MILE CIRCUITOUS ROUTE TO GET TO THE QUARRY

BUCKET LOADER GOES OUT OF ITS CLASS

Makes Good Record in Stripping on County Road Work

COUNTY engineers and superintendents, because of the inelastic quality of their appropriation for equipment, are often forced to use whatever equipment they have on hand for any job that has to be done. For instance, not having an elevating grader or steam shovel available, A. R. Russell, county superintendent of Highways for DeKalb County, Illinois, put his self-feeding bucket loader to work stripping, as shown in the photographs. The loader was originally purchased for loading crushed rock, but it has proved so successful in stripping that Mr. Russell is planning to use it for widening cuts and similar work where an elevating grader might ordinarily be used. When the pit is opened it will be used for loading crushed rock.

DeKalb County forces are stripping dirt, as shown, at the rate of 150 to 200 yd. a day. The ground is first plowed, then the self-feeding bucket loader digs in and loads the trucks. The trucks take the dirt to

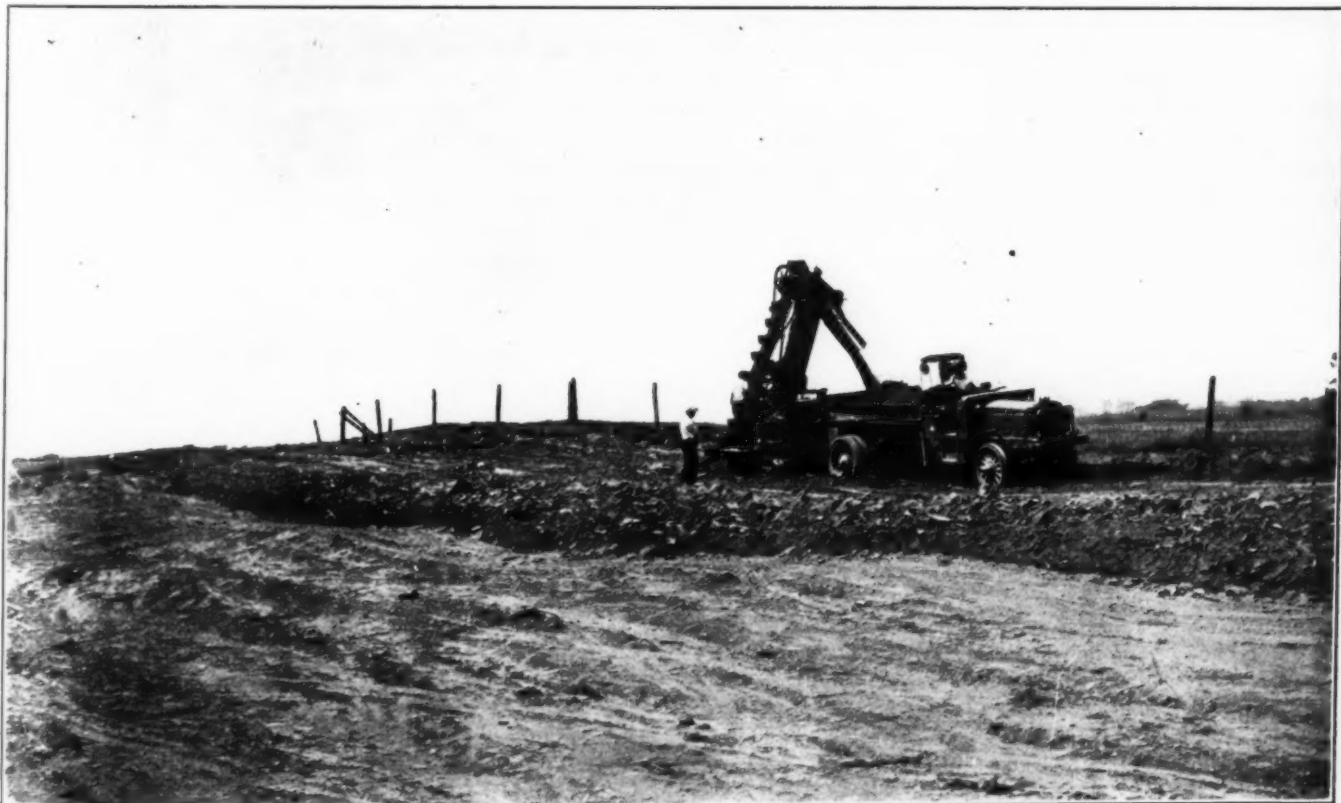


BUCKET LOADER STRIPPING DIRT

fills on roads in all parts of the county. Hauls as long as 5 miles have been made as Mr. Russell finds it cheaper to use this dirt which he can get loaded quickly than to try to get the material nearer the fills.

On the best day one man and a machine loaded 104 trucks in 10 hr. Each truck has a capacity of 2 cu. yd., but in this case, as can be seen from the photograph, the trucks were loaded high and were well trimmed. Figuring the minimum load at 2 yd. the total amounts to 208 cu. yd. Figuring that each truck carried $2\frac{1}{4}$ cu. yd., which is nearer right, the 104 loads amount to 234 cu. yd.

Had the ground been pulverized as well as plowed, it would have been possible to have loaded much more. Notice the many large hard lumps. Plowing is none too good at times, as a truck is used to pull the plow when the county's horses are not available. However, in spite of the conditions of the ground, only one man



THIS MACHINE LOADED AS MANY AS 104 TRUCKS IN 10 HR. ONLY ONE MAN WAS NEEDED AT THE LOADER

was used to operate the loader and the feeding discs were not aided by any shovelers.

This is one of the best examples of the efficient work county superintendents and engineers are doing with their day-labor forces throughout the country.

Costs, without depreciation figured, for the best day follow:

10 gals. of gasoline for loader at \$.212 per gallon....	\$2.12
2 quarts of oil for loader at \$.25 per quart.....	.50
1 operator for loader at \$.45 per hour.....	4.50

Cost per cu. yd. = $\$7.12 \div 234 = \$.03$.

\$7.12

These figures indicate clearly that the machine managed to do its unusual work at a reasonable cost and justifies Mr. Russell's judgment in using it.

CARBORUNDUM IN GRANOLITHIC FLOORS

BY E. F. CLASBY

AN unusual experiment, looking toward the production of a wear-proof, slip-proof floor, is being tried out in the construction of a new plant for the Dennison Manufacturing Company at Marlboro, Mass., general contract for which is in the hands of Aberthaw Construction Company of Boston.

The first story of the 4-story structure is extended on the railroad side of the building to form an enclosed shipping-room outside of which is a narrow shipping platform. Because of the heavy wear which is bound to come on the floor surfaces here, it was decided to try the use of a substance of known wearing qualities rather than one of the many floor hardeners which act on the materials in the concrete. Accordingly, carborundum in the grain form was purchased.

The method of applying this was to place the granolithic finish in the usual manner and after it had been floated fairly free of water to sprinkle the carborundum on the surface by hand as evenly as possible. The finish was then floated with a steel float which worked the carborundum well into the surface so that, for the most part, it did not show at all, being covered by a very thin film of cement. However, even a slight rubbing of the surface removes this film and exposes the carborundum grains as a wearing surface.

It is expected that the wear on this floor will be materially lessened through the use of this method, and that the usual tendency of granolithic to wear slippery will be entirely removed. The contractors are watching the experiment with interest and if it is successful, the method will be valuable to builders.

ROAD BUILDING IN SAO PAULO, BRAZIL

MORE actual highway building has been done in the last three years in the State of Sao Paulo, Brazil, than in any other part of Latin America. In fact, available reports indicate that the total mileage of new highways completed in that State during recent years is greater than in all the rest of Latin America combined. To those who are familiar with the wealth of the State of Sao Paulo, and with the progressive spirit of its people this result is not surprising. The city of Sao Paulo has well been called the Chicago of South America. The entire State of Sao Paulo might be compared favorably with our own Middle West, on account of its great agricultural wealth.

Washington Luis, who is now president of Sao Paulo, was elected largely on a platform that called for an extensive program of highway construction. One of his first steps after he took office was to develop a plan for a State-wide system of highways. A large mileage of this system has already been completed, and work is in progress on a number of other projects.

On account of the immense area covered by the State of Sao Paulo, and the sparse population in parts of the State, some of the highways in the plan for the eventual system probably will not soon be undertaken. Several of the principal cities are now connected, however, by the new roads. Within a comparatively short time travel over fairly good roads will be possible between most of the centers of population.

Prior to the inauguration of this present highway

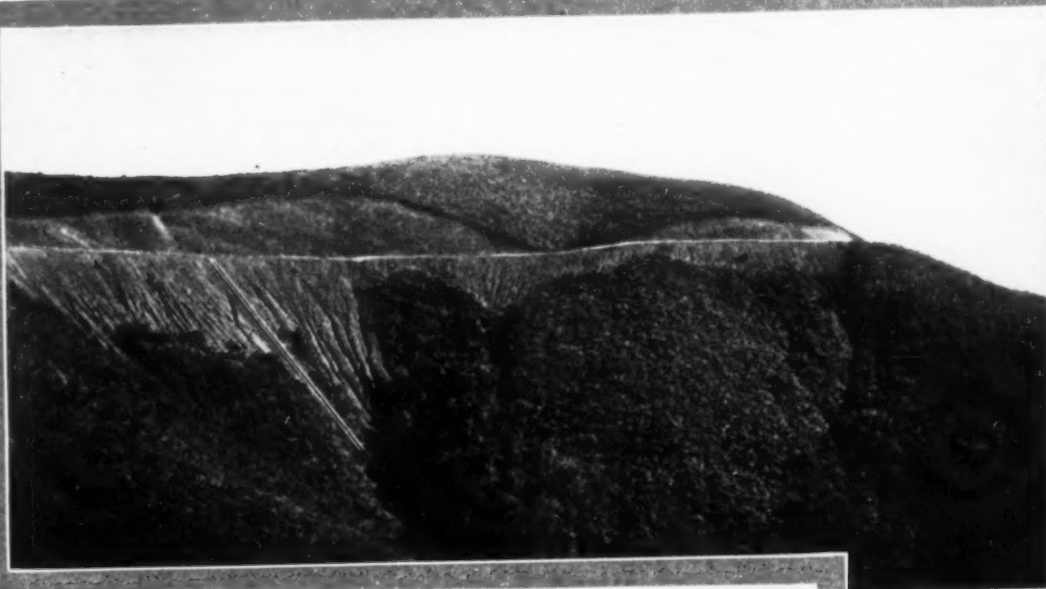
building program, there were practically no roads in Sao Paulo over which automobile traffic was practicable. In fact, the few existing roads were mere cart trails. The first problem, therefore, was to build through main roads on good locations.

On account of the great distances involved it was practicable to construct only natural-surfaced highways in the beginning. These have been well located. Most of the bridges and waterways also are of permanent construction.

As traffic develops, the policy is to improve the surfacing. In the meanwhile, good local material has made it possible to provide at low cost satisfactory surfacing for much of the new work. The absence of frost also permits this surfacing to be maintained more easily than would be the case in most of the United States. But much of the maintenance work thus far has been done by hand. Modern American maintenance methods and machinery would cut the cost of this work greatly and give better results. This also applies to the somewhat crude methods of construction employed, since most of that work is done by hand.

On the opposite page are photographs showing more or less typical construction in different parts of the State. Much of the latter is hilly and rolling; great areas also are quite mountainous. Many serious problems of location and construction are thus presented. The photographs give an idea of the skill with which the Brazilian builders have solved these problems.

Three Glimpses of Brazilian Roads



PHILADELPHIA'S BIG BRIDGE

Work Well Under Way on \$28,000,000 Structure Across Delaware River—
Boom and Counterweight System Used to Concrete Caissons

NOW that the construction of the longest single span suspension bridge in the world is under

largest existing spans of similar design as shown in one of the illustrations. The main span is 1750 ft. and surpasses the Williamsburg Bridge in New York City, the longest existing span of the suspension type, by



LAUNCHING CAISSON B WITH DUE CEREMONY.

way, it is interesting to observe the methods being used to carry this stupendous structure to completion by September, 1926.

For the benefit of those not familiar with the dimensions and general features of the Delaware River Bridge it may be visualized by comparing it with the



CAISSON B FROM RAILROAD WHARF, SHOWING METHODS OF SUPPLYING MATERIAL.

150 ft. The distance between anchorages is 3189 ft. The overhead clearance is 135 ft. above high water.



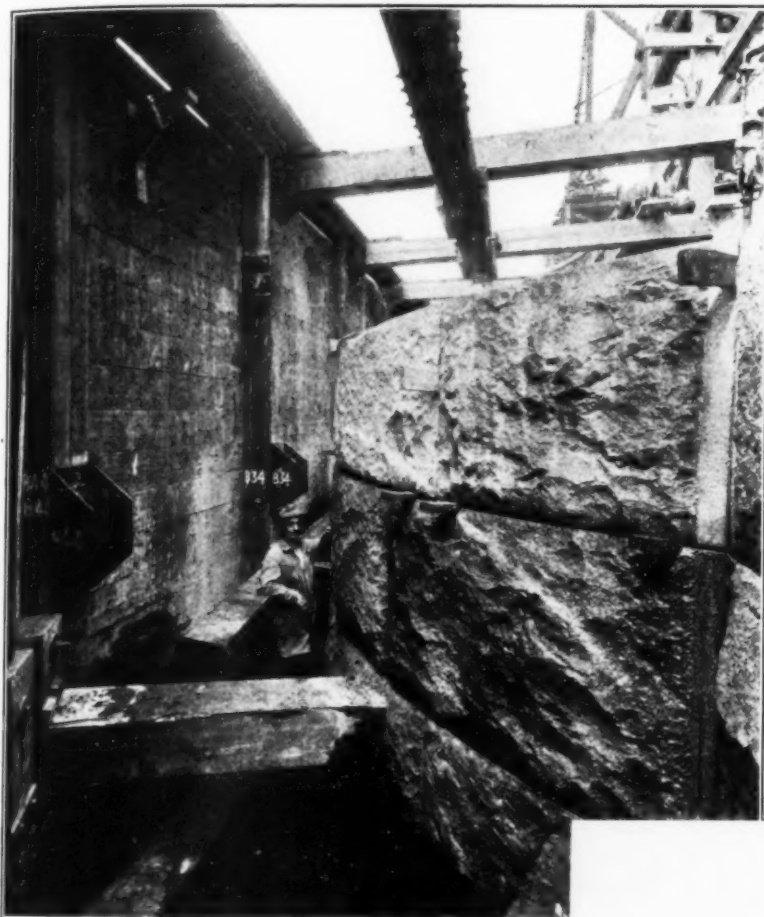
CAISSON B IN PLACE READY FOR SINKING.

The deck is 125 ft. 6 in. wide. The bridge as planned is a two-cable suspension type, the cables being 30 in. in diameter, an increase of 9.5 in. over the cable diameter of the Manhattan Bridge. Each cable is made

of the caisson and discharge it into barges alongside.

For placing the concrete in the cofferdams to the elevation at which the granite work commences, twin steel towers, each equipped with boom and counterweight, are used. The towers are designed with special steel bracing running up two-thirds of the height to offset the lack of guys on the riverside. Two concrete mixers and two hoisting engines are operated by steam received from a large locomotive type boiler placed some distance away and more accessible to coal supply.

Sand and stone arrive in barges which are unloaded by derricks operating clamshell buckets which handle the material direct into bins over the mixers. The plants on both sides of the river are practically identical with the exception that on the Camden side railroad tracks are available alongside and permit cement to be brought in cars direct to the site. The receiving of the material alongside in easy reach of the derrick and bins together with the flexibility of the concrete distributing system makes possible a steady uninterrupted flow of concrete. The boom and hopper are mounted on a steel frame which slides on guides attached to the outer sides of the front corner posts of the tower. They are raised and lowered by means of a cable running over sheaves on top of the tower. The counterweight chutes

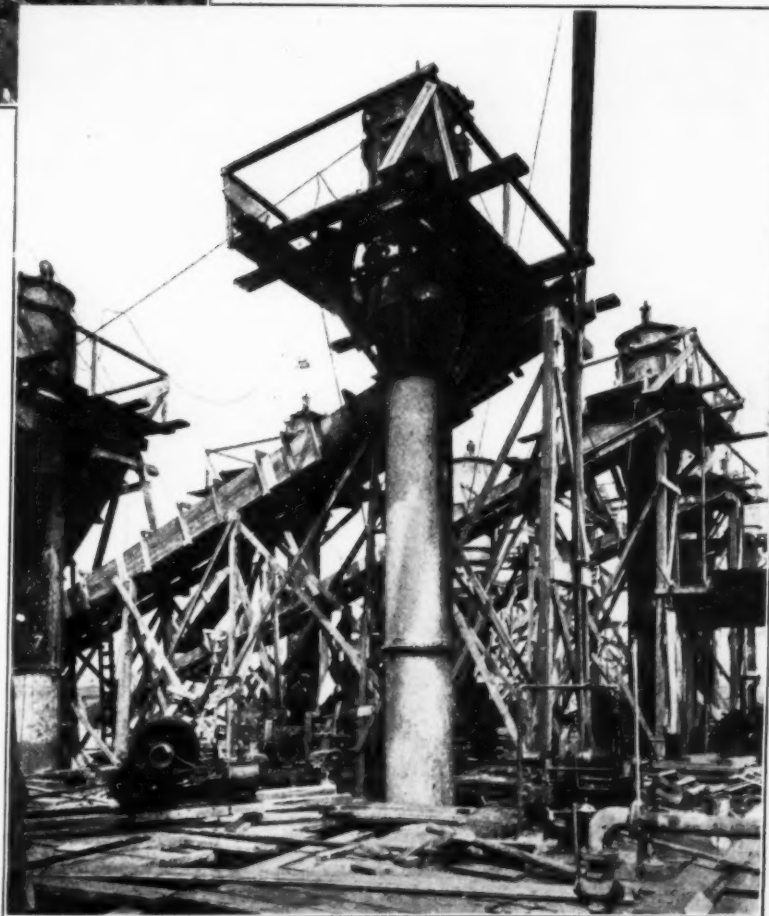


SOME OF THE GRANITE WORK SHOWING THE SIZE OF THE BIG BLOCKS.

up of 16,500 strands of steel wire of 0.192 in. diameter. It will combine the practical with the picturesque and provide a crossing for 100,000 persons daily.

The April issue of **SUCCESSFUL METHODS** contained a description of the building of the caissons at the plant of the New York Shipbuilding Corporation, some 3 miles from the bridge site. The illustrations which accompany this article show the caissons in various stages from the ship ways to their final location with the granite work being carried on.

One illustration shows the caisson before being sunk and gives a good idea of the method used to handle the material excavated in the working chamber below. The muck locks through which the buckets carrying the material pass and empty into the wooden troughs are shown. Cables running through sheaves in the top of the locks and operated by steam hoists raise and lower the buckets. Working in conjunction with the buckets are pumps which suck up the muck and sand from the working chamber



LOCKS IN PLACE ON CAISSON B.

greatly reduce the time required for moving the chutes when pouring as well as the number of men required.

One of the views shows how the contractors are placing the huge blocks of granite which surmount the concrete in the cofferdams above the waterline. Locomotive cranes running on tracks lower the blocks, some of which weigh as much as 20 tons, to place.

At the present time the work of concreting and placing granite work in the two piers as well as preparing the site for the main anchorages, is in progress. The anchorages will be massive, heavily buttressed stone structures not unlike a medieval fortress in appearance. The anchorages are designed as monoliths and each will require 90,700 cu. yd. of masonry, resting on inclined caissons extending down to rock.

The bridge will have a plaza constructed at the ends and great care is being used to prevent the congestion of traffic resulting from the 4 lines of car tracks and 6 lines of vehicular traffic which the deck will provide in addition to the sidewalks carried above. The roadway is 57 ft. wide from curb to curb.



CONCRETE TOWER AND CHUTE AND CRANE ERECTING STEEL WORK ON CAISSON A.

All main truss members, towers, floorbeams and bracing will be of high strength alloy steel. A medium carbon steel will be used for the remaining steel construction except the cables and hangers. For them high carbon steel wire possessing even greater strength than that in the New York bridges, will be used. All exposed masonry will be of granite with backing of concrete. Reinforced concrete will be utilized for the roadway slab. The roadway will be paved with wood block.

The engineers in charge of the design and construction for the Delaware River Bridge Joint Commission are Ralph Modjeski, Chief;

Clement C. Chase, Principal Assistant Engineer; M. B. Case, Senior Resident Engineer in charge of construction; Paul P. Cret, Architect. The Keystone Construction Co. and Holbrook, Cabot and Rollins are joint contractors.

The structure which is estimated to cost \$28,871,000, will be ready by 1926, in time for the great exposition planned in Philadelphia to celebrate the Sesqui-Centennial of the Declaration of Independence.



THE RELATIVE SIZE OF THE NEW BRIDGE IS CLEARLY SHOWN BY THIS DRAWING

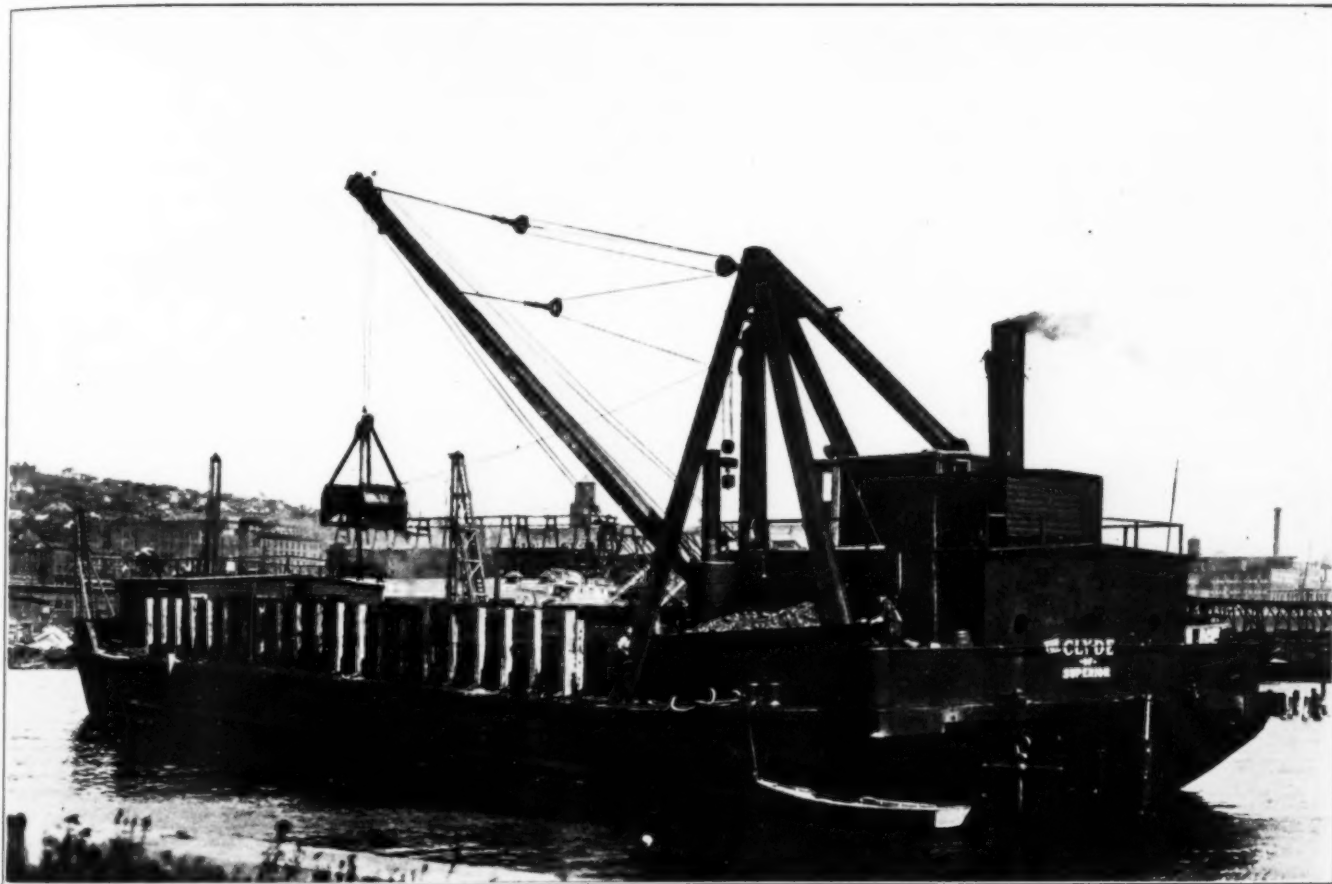
CALIFORNIA ELIMINATES OVERLOADS

THE California Highway Commission operates a traffic regulation squad under the direction of Major C. L. J. Frohwitter. The inspectors keep their eyes open for trucks which infringe the regulations and it has been found that in the districts in which they are operating the damage caused by overloading

has been greatly lessened, thereby reducing the cost of maintenance.

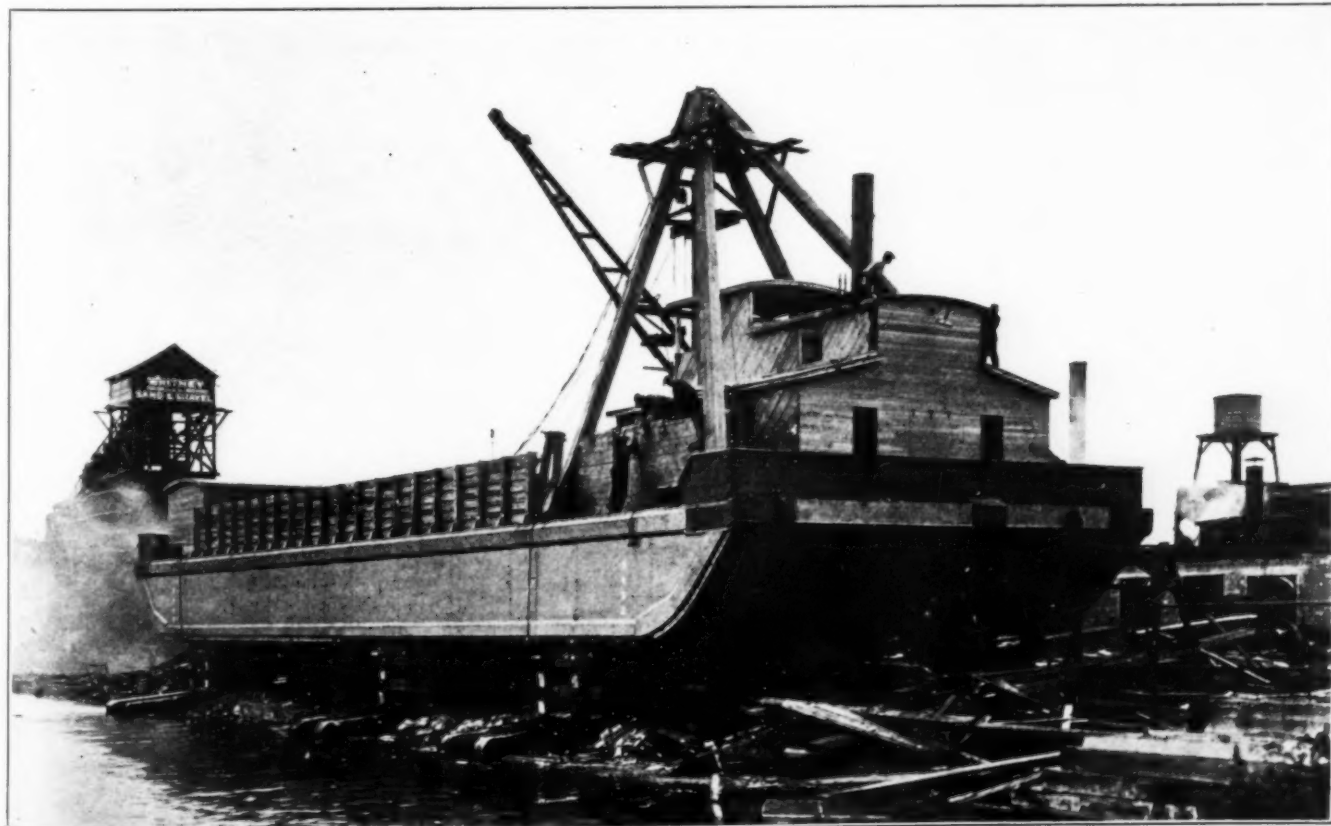
A number of the larger truck companies in California are co-operating with the traffic regulation squad by instructing their drivers to make sure that their loads are within the required limits before starting.

THE LAST WORD IN GRAVEL SCOWS



BOTH of the scows shown on this page are owned by the Whitney Brothers Co. of Superior, Wis., large producers of sand and gravel. The upper photograph shows the first scow built, which has been in

use for some time. It did its work so well that the second one was constructed and was just launched a few days ago. The photograph below shows it still on the ways, but almost ready to take the plunge.



JUMPING FROM JOB TO JOB

Mobility of Crane Mounted on Motor Truck Keeps It Busy and Earns Profits for Cleveland Contractor

THE difficulty and cost of getting construction plant from one job to another is a big factor in a contractor's calculations. Peter Herkner of Cleveland, Ohio, has one piece of equipment which is earning him money largely because it has practically eliminated this factor. Some time ago he added to his plant a crane mounted on a motor truck, and since he acquired it he has found that its mobility kept it in constant demand, so much so that he has had to buy another.

The first job the crane performed was the taking out of a ramp containing about 100 yd. of material. This took about a day and a half and as an incidental a concrete mixer was lifted from the basement excavation to the sidewalk level. The photograph shows

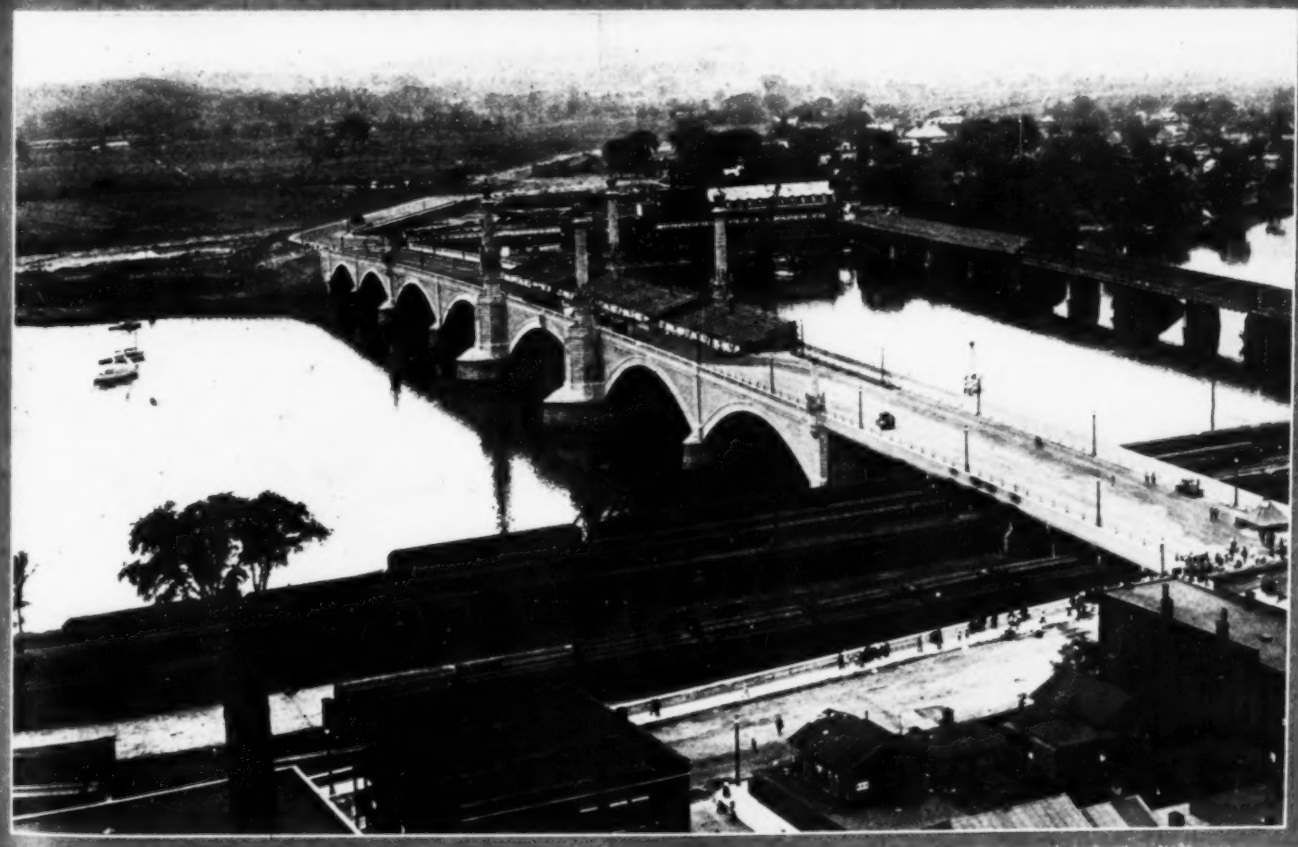
the crane at work on this job. The digging of two residence basements, approximately 300 yd. each were the next assignments, and when they were finished the crane was dispatched to a gravel pit and set to work loading five-ton dump trucks. On this work the $\frac{1}{2}$ -yd. bucket had to be lowered 15 ft. into the pit and then raised and swung over the waiting truck. In one day it loaded 66 trucks in 8 hours.

In addition to this work which was, so to speak, in the line of its regular business, the crane was hired from Mr. Herkner by the City of Cleveland for use during a garbage strike. It was put to work unloading the garbage from cars to pits or trucks and easily handled 8 to 12 cars a day. The city expects to hire it next winter for unloading coal for the schools.



REMOVING A RAMP ON BUILDING EXCAVATION—CRANE WITH ONE-HALF YARD BUCKET IS SHOWN LOADING TRUCK.

Two New England Bridges



The upper photograph shows the first span of the new memorial bridge at Portsmouth, N. H., connecting the States of New Hampshire and Maine, being floated into place. This span is 300 ft. long. © Keystone.
The lower photograph shows the new Hampden County bridge across the Connecticut River at Springfield, Mass. It was built as a memorial to the County's soldiers in the World War. The grand stand all ready for the dedication parade may be seen in the photograph. © Keystone.

NEW STREET TO SOLVE TRAFFIC PROBLEMS

More Than 400 Buildings Razed in Extending Ogden Avenue in Chicago

ONE of the big city planning projects now being pushed to successful completion in Chicago is the Ogden Avenue Extension. The northwest section of the city is reached by many diagonal streets that strike off from the heart of the city. This new thoroughfare, running southwest from the main entrance to Lincoln Park, will intersect these busy diagonal streets, make communication far easier between them and enable traffic to move rapidly from North Clark

necessary to remodel them. Work is being rushed in removing great piles of brick, stone and woodwork, in leveling the foundations and in making the necessary excavations or fills.

The entire width of the thoroughfare will be 108 ft. On each side of the pavement proper will be a 14-ft. sidewalk. The 7-ft. strip next to each curb will be paved with sandstone so that heavy trucks will not injure the pavement while standing near the

curb. The entire project is too expensive for all of the work to be done now, but money is available to do all but the viaduct work and the building of two bridges that will be required to carry the new highway over railroad tracks, the North Branch of the Chicago River and the North Branch Canal, all in the vicinity of Halsted Street, between Chicago Avenue and Division Street.

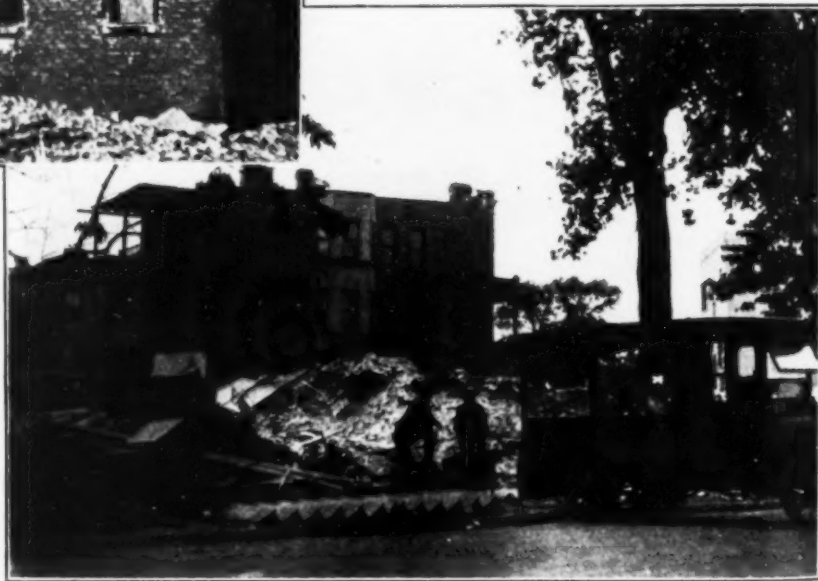
Michael J. Faherty, chairman of the Board of Local Improvements, feels confident that the strip from Division and Halsted streets to the Lincoln Park



HOUSE WRECKING TO CLEAN WAY FOR
OGDEN AVENUE EXTENSION.

Street to the west side of the city, two miles west of the loop district, without passing through the loop itself. The Ogden Avenue Extension will intersect such important thoroughfares as Lake Street, Grand Avenue, Racine Avenue, Milwaukee Avenue, Chicago Avenue, Division Street, Halsted Street, Clybourn Avenue and North Avenue.

The work on this improvement started at Clark and Center streets and has extended steadily to the southwest, making a clean sweep in the destruction of residences, stores, garages, shops, apartment buildings, banks and factory buildings that have stood in its course. One of the branch postoffices has been demolished. Other important buildings have had corners cut away and it has been



MORE THAN 400 BUILDINGS OF THIS GENERAL TYPE HAVE
BEEN RAZED.

entrance will be completed by the end of 1922. More than 400 buildings have been leveled in this stretch of one mile and a half and rapid progress is being made.

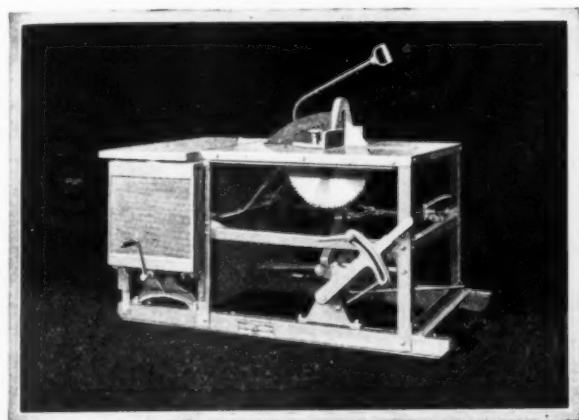
MIXER REPAINTED FOR EVERY JOB

BEFORE moving one of their concrete mixers to a new job the Villadsen Brothers of Salt Lake City always have the mixer painted. This rule is contained in the instruction book for employees which the company gets out and is based on the theory that it not only prolongs the life of the mixer but also

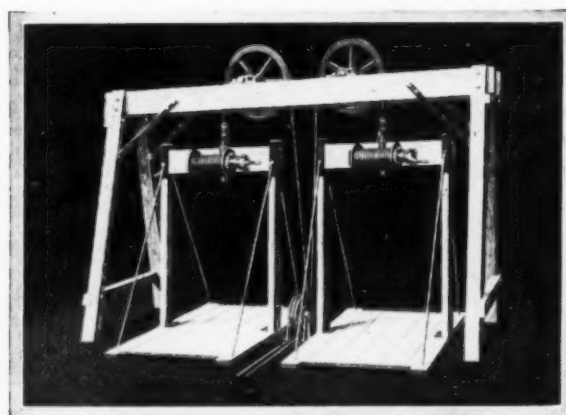
makes a much better impression upon all who see the equipment being moved in. Villadsen Brothers have incorporated a number of other useful rules in their instruction book which probably would work equally well if tried by other contractors who are interested in efficient methods.

C H & E

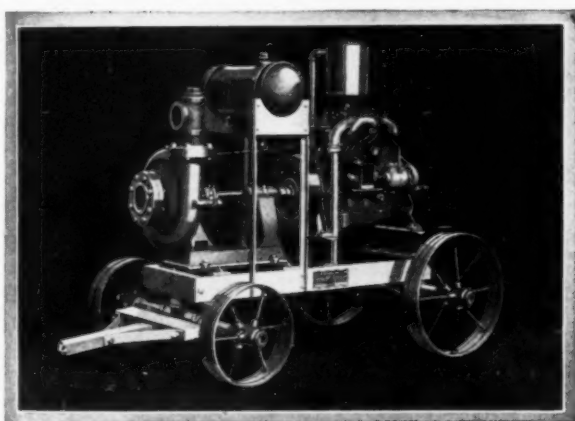
OUTFITS



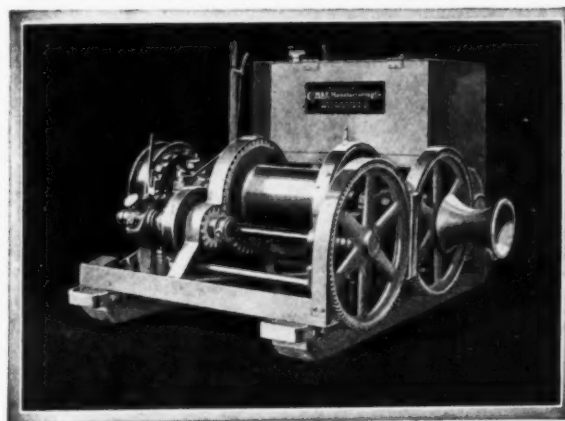
C. H. & E. NO. 15 SAW RIG



C. H. & E. MATERIAL ELEVATOR



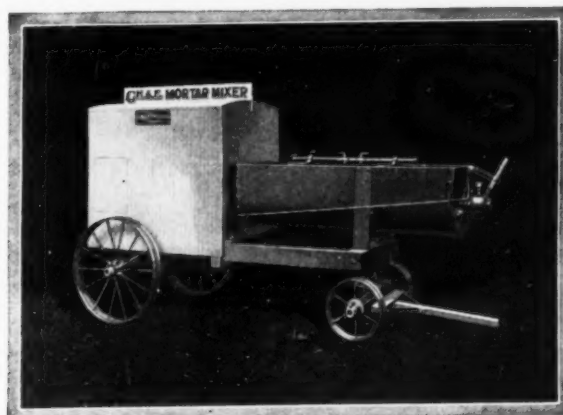
C. H. & E. NO. 16 CENTRIFUGAL PUMP



C. H. & E. NO. 7 REVERSIBLE HOIST



C. H. & E. NO. 10 DUAL TRIPLEX PUMP



C. H. & E. NO. 3 MORTAR MIXER

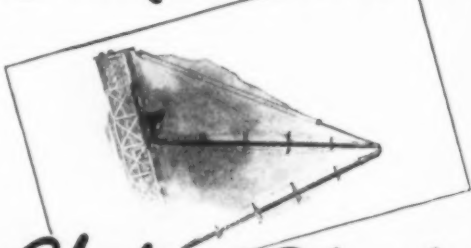
— Write for Our Catalog —

C. H. & E. Manufacturing Co., Inc.

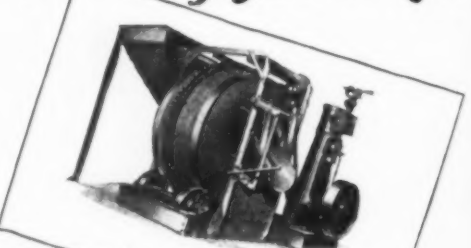
384-A Clinton St.

Milwaukee, Wis.

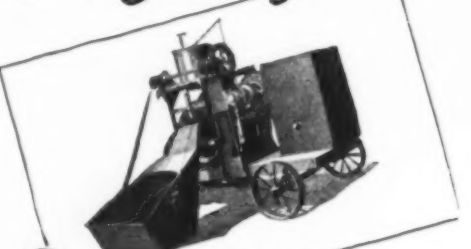
Steel Towers and



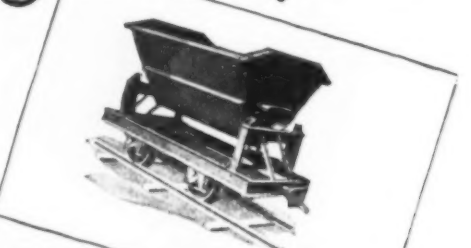
Chuting Plants



Heavy Duty and



Small Mixers



Cars and Track



Clam Shells



Three Full Years of Hard Work—

**\$23.00 Maintenance Cost
Including Repair Parts**

is the record of this one-bag Lakewood Mixer.

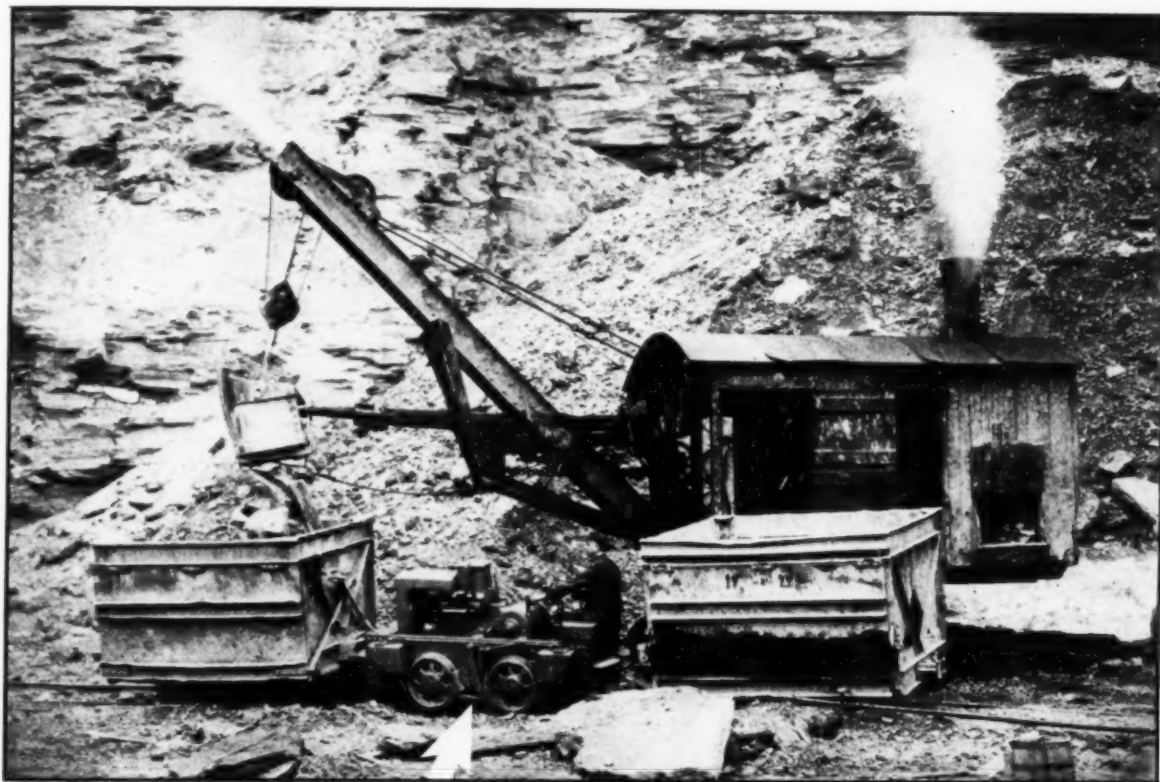
It is break-downs and lost time waiting for repairs that you want most to eliminate—the record of this machine means sturdiness and long life—but most of all greater speed and continuous operation on the job.

Records of this kind prove the worth of Lakewood Mixers.

*Write for Bulletin 21-E
It tells the story.*

**The Lakewood Engineering Co.
Cleveland, U. S. A.**

Complete Road Plant—Paving Mixers, Road Forms, Gasoline
Locomotives, Track, Batch Boxes, Subgraders,
Finishing Machines, Clam Shells,
Grout Mixers, Tunnel Traps



Just As Sturdy As Its Big Brothers Because It Too Is Hyatt Equipped

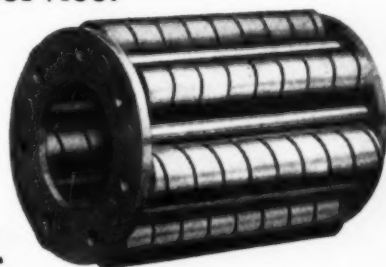
See that little locomotive down between the cars?

That's the new 2-ton model just brought out by the Atlas Car and Manufacturing Company of Cleveland, Ohio.

This compact, rugged machine is equipped with Hyatt roller bearings which insure the same dependable operation that is secured from large locomotives by the use of these bearings.

Locomotives equipped with Hyatt bearings roll easily at the first application of power—they require lubrication only three or four times a year—they do not require bearing adjustment or replacement throughout many years of severest service.

Safeguard your profits on every contract by using dependable equipment—specify Hyatt bearings on your locomotives, cars and mixers.



Hyatt Roller Bearing Co., New York, N. Y.

Industrial Bearings Div., New York
Motor Bearings Div., Detroit

Tractor Bearings Div., Chicago
Pacific Coast Div., San Francisco



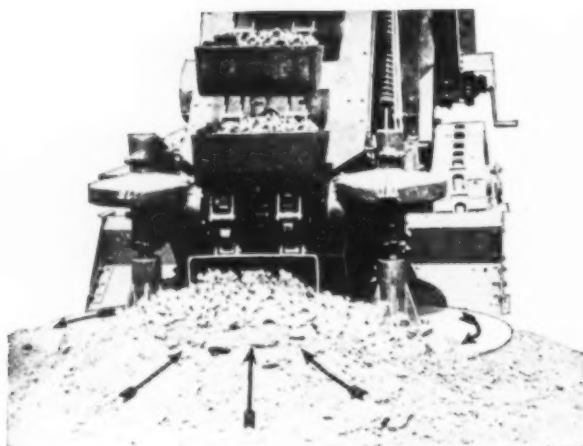
STRIPPING

YOU can strip with a Barber-Greene at the rate of 150 to 200 cu. yds. a day. Bury the lower end into the plowed dirt and let the feeder do the rest. The discs do the digging and feeding, and the scraper cleans up.

De Kalb County, Illinois, using a Model 21 Barber-Greene, are stripping dirt from a gravel pit, loading it into trucks and making fills on nearby roads. On the best day yet recorded, they loaded 104 trucks—each with a capacity of $2\frac{1}{4}$ cu. yds.—and on several occasions they loaded nearly as much as on the record day.

The operation of the Barber-Greene in De Kalb County demonstrates its adaptability. Besides stripping it will be used for widening cuts along the county roads, and when the pit is opened it will load crushed rock from a stock pile at the crusher. This was the use for which the loader was originally purchased.

Now we have the Model 42 which is bigger and more powerful than the Model 21. With it you can strip or handle other material better and faster— $1\frac{3}{4}$ cu. yds. per minute. Send the coupon for details of Model 42 and descriptions of some of the present applications.



Arrows Indicate Action of the Discs

Barber-Greene Company

530 W. PARK AVENUE, AURORA, ILLINOIS, U. S. A.

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Chattanooga
Knoxville
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Canadian Agents: *Mussens Limited, Montreal, Winnipeg, Toronto, Vancouver*



LOADING



FOR Brereton & Bauck, Emmetsburg, Iowa, a dragline and a Barber-Greene handled 28,000 cu. yds. of pit-run gravel for a road job as shown. The Barber-Greene loaded 12,500 cu. yds. in fifty consecutive working days, and in one day loaded a maximum of 300 cu. yds.

Half of the material was hauled direct to the mixer and half was deposited during the winter in one huge storage pile containing 14,000 cu. yds. The Barber-Greene was brought from the pit and reloaded the gravel from this storage pile as shown in the smaller picture. This made a total of 42,000 cu. yds. handled by the Barber-Greene.

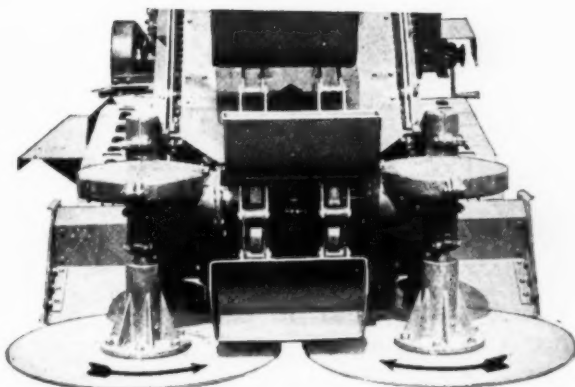
Mr. Brereton writes:

"... We are not working our B-G loader to capacity for the reason that our industrial haulage outfit has a smaller daily capacity than the loader.

"Our contract required handling 28,000 cu. yds., 14,000 yds. of which were handled twice, making a total of 42,000 yds.

"We wish to say that for this particular contract the B-G loader has been an ideal machine."

Please use the coupon if you are interested in any such application.



The Barber-Greene Patented Disc Feeder



TEAR OUT ALONG THIS LINE

BARBER-GREENE COMPANY
Aurora, Illinois.

Please send more information about your machines for handling

Name

Position

Company

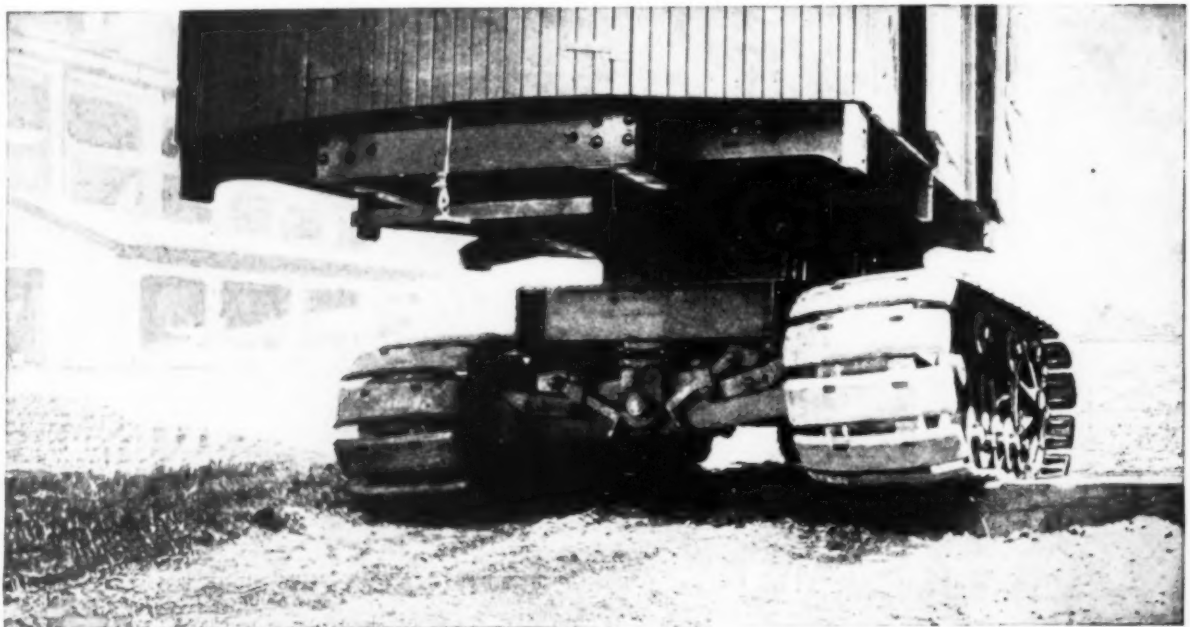
City

State

S M

**Send the Coupon
Today**

The Thew Continuous Tread



The Thew Shovel has been traveling on continuous tread for more than four years, long enough to prove right design and proper construction.

Power Steer

A slight swing of the cab to right or left disengages the clutch of either tread. The machine will actually turn around in its own length.

Two Speeds

The Type O travels 65 ft. a minute on level ground; 42 ft. a minute on sharp grades or in heavy going.

Climbs Stiff Grades

It has been known to take a 40% grade under its own power.

Gives Ample Bearing

Treads are 26" wide (9 1/2" over all) and 9 1/4" long. The shovel has ample bearing surface and stability without interference with close digging over either end.

Double Sprockets and Rollers

Has double sprockets for driving the treads, and double rollers to increase stability. Treads can not ride off sprockets on side hill work.

Is Flexible

The rocker bearing block turns with the up and down motion of either end of the front axle which is attached to the truck frame by a swivel pin. Four point suspension for digging is given by adjustable wedges.

Is Ruggedly Built

Like the traction truck it is built with the semi steel center having single I beams for tread clearance. The truck frame, side members, sprockets, chains, gears and clutches are all built in keeping with the heavy duty the shovel performs.

THE THEW SHOVEL CO., LORAIN, OHIO

30 Church St.
NEW YORK CITY

Monadnock Block
CHICAGO

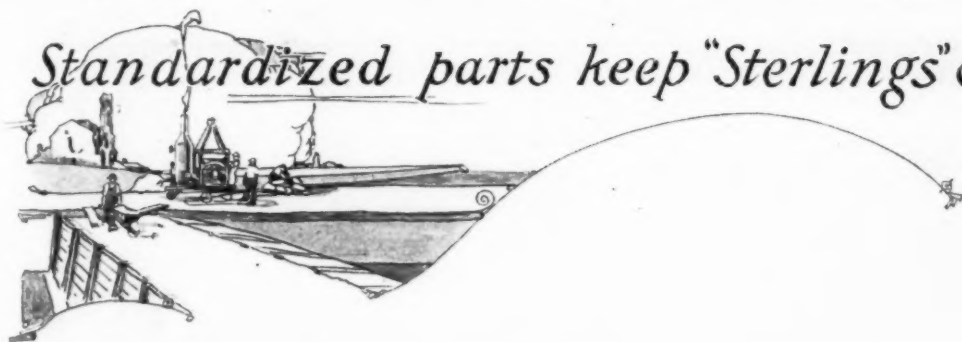
Railway Exchange Bldg.
KANSAS CITY, MO.

The Feenaughty Machinery Co., Portland, Seattle, Spokane, Boise
Smith-Booth-Usher Co., Los Angeles, San Francisco
Gormans Limited, Edmonton, Calgary, Vancouver, Can.
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Standardized parts keep "Sterlings" cheapest



Why They Buy Sterling Barrows

*Catalogue 35
Tells the
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Barrows for
Every Purpose*

Many of the larger contractors buy Sterling Barrows because they are so well standardized—because they know that any part will fit—because they can secure either Sterling Barrows or repairs in any part of the country. All contractors know Sterling to be a Quality Barrow made special for the contractors' trades.

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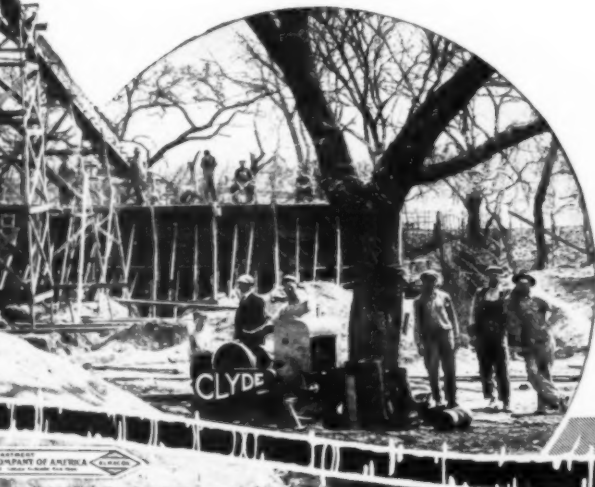
EXPORT DEPARTMENT
ALLIED MACHINERY COMPANY OF AMERICA
ALMACOR 51 Columbia St. New York, U.S.A. Canada Branch New York

Users of CLYDE

IT is not the Clyde way to make indefinite statements concerning the equipment which the company manufactures. Quite the contrary.

When you read of economies in performance and superiority in Clyde manufacture, you are reading statements backed by users of Clyde equipment who write voluntarily of their machines and the results they are producing.

For years the Clyde Company has striven continuously for the ever-better product, Good-enough has never satisfied. This is again illustrated by the improvement in the Silent Chain Drive Gasoline Hoist which is making many new friends for the company and bringing words of praise from the older ones.



Shown here is a 15 H. P. Gasoline Hoist in use by Burt & Tripp, of Herington, Kansas, in connection with a mast hoist bucket outfit.

It recently made a 26 hour continuous run.

THE CLYDE LINE

Steam Hoists
Steel Derricks

Electric Hoists
Excavators

Gasoline Hoists
Traction Cranes

Belt Hoists
Blocks and Sheaves

Derrick Fittings
Logging Machinery

CLYDE IRON WORKS SILENT CHAIN DRIVE TROUBLES

"We recently completed a twenty-six hour continuous run, and the hoist did not miss a lick. It was as peppy on the finish as on the start."

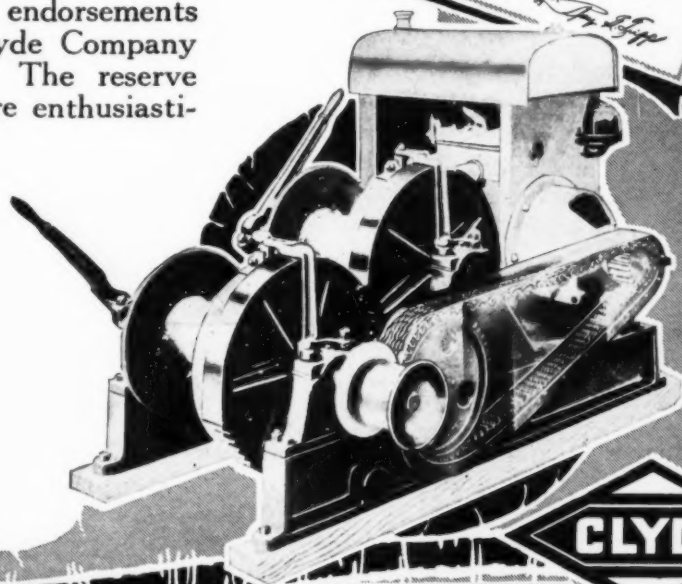
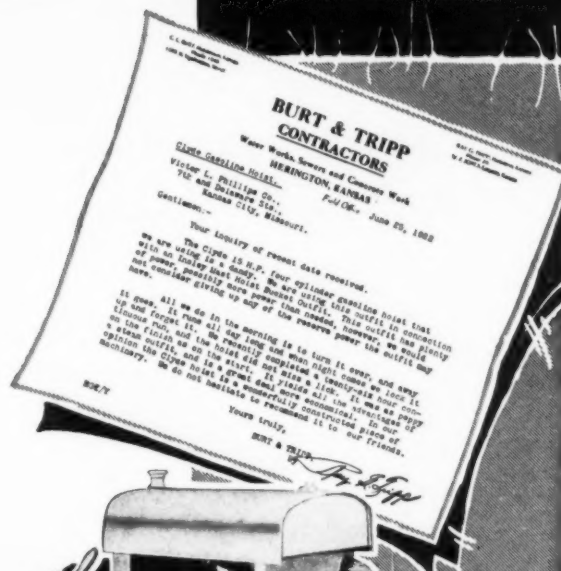
That is the statement written by Ray G. Tripp of the firm of Burt & Tripp, contractors of Herington, Kansas, concerning the 15 H. P. Clyde Silent Chain Drive Gasoline Hoist which is handling a big job with no difficulty for Mr. Tripp.

This is one of many voluntary endorsements which are being received by the Clyde Company for this Improved Gasoline unit. The reserve power and economical operation are enthusiastically admitted.

Write for details.

The Silent Chain Drive Hoist is built with one, two or three drums and from eight to fifty horsepower to meet the needs of any operation.

You'll take pride in your Clyde!



CLYDE IRON WORKS SALES COMPANY

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It tells a story of progress that should interest every user of wire rope. Ask for it. It describes and illustrates the rope with the Telfax Marker. The greatest advancement in the manufacture of wire rope in recent years.

Write us today for your copy.

And let us quote you on your present or future requirements of this superquality rope.

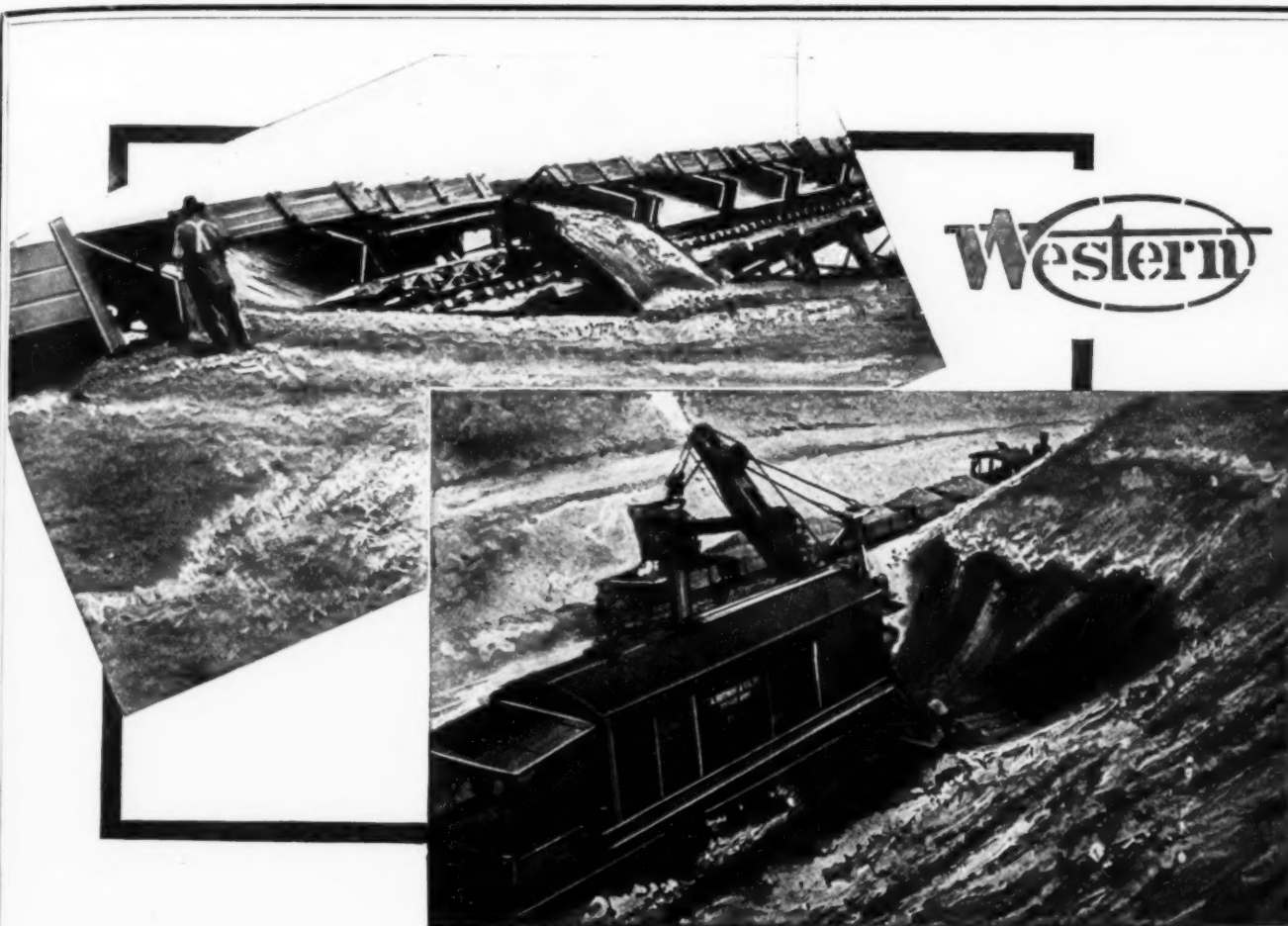
WILLIAMSPORT WIRE ROPE COMPANY

"accepted as the best"

Main Office and Works
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The fastest growing wire rope plant in America



Western Dump Cars Get Results

THE DUMP CARS in the pictures, loading and dumping, are 4-yd. Westerns, engaged in heavy road excavation near St. Paul. There is a wide field of work in which they are supreme.

In Dam and Reservoir Construction, involving large yardages and long hauls, they are indispensable. Western Dump Cars built the reservoirs at Las Vegas, N. M.; St. Paul, Minn.; Cleveland, Ohio, and many others.

The long life and low upkeep of Western cars, compared with other makes; the ease and speed with which they are dumped; the way in which they cling to the track; the fact that they **OUTWORK** and **OUT-LAST** any other make of dump cars, are big factors in economical operation.

Built in all practical sizes, from 1 cu. yd. to 45 cu. yd. capacity.

Send today for Dump Car Catalog S-51.

We also are the largest manufacturers of road building machinery in the world.

Western Wheeled Scraper Company

Earth and Stone Handling Equipment

Aurora, Illinois



AUSTIN GYRATORY CRUSHERS are made in seven sizes having hourly capacities of from 5 to 250 tons. The smaller sizes are portable.

Combined with *Austin Elevators, Screens, Bins, Cars, etc.*, they make complete crushing and screening plants that will speed up your work, reduce costs, and solve your material problems in these days of priorities and transportation tie-ups.

Catalog 29-X tells the whole story and contains drawings of many particularly successful plants of various capacities. We would like to send you a copy.

Austin Manufacturing Co.

NEW YORK :: :: CHICAGO :: :: SAN FRANCISCO



ALL IN A DAY'S WORK

The ability of the Austin Rip-Snorter (combined Scarifier and Grader) to tackle the hardest reconstruction jobs successfully, upsetting all previous time and cost standards, is well demonstrated by this illustrated letter of some of the things the Marathon County, Wisconsin, machine is doing.



**"Everything
from a dragon
scraper to a
road roller."**



OFFICE OF
HIGHWAY COMMISSIONER, MARATHON CO.,
J. H. VOGT
HIGHWAY COMMISSIONER

Wausau, Wisc., Aug. 26, 1922

The Austin-Western Road Machinery Co.,
Chicago, Ill.

Gentlemen:

Replying to your letter of recent date, am glad to say that the Austin Rip-Snorter purchased from you last spring has been entirely satisfactory.

We used the Rip-Snorter to scarify about three and a half miles of old macadam road, which was replaced with a new concrete pavement. The Rip-Snorter not only did the scarifying but also constructed an accurate sub-grade for the pavement. (See views No. 1 and No. 4). Some of the old macadam had been placed on an old stone road, which had been built in the early days with large field stones, some of which were a foot in diameter. (View No. 2). We had doubts as to the ability of the machine to go down through the macadam and tear up this old stone roadbed but it did the work very nicely. The machine has paid for itself on this one job.

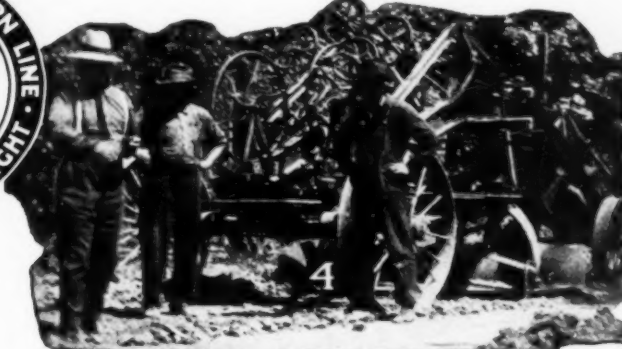
We have used the machine for scarifying and reshaping, rutted and worn-out gravel and granite roads, with excellent results. We also used the machine to scarify a hill road where the natural stone formation existed. (View No. 3). We attempted this work as an experiment but the results obtained were almost one hundred percent perfect.

We also ripped up a long stretch for a sewer, tearing up the hard, stony surface and eliminating the very hardest part of the hand labor.

So far, the Rip-Snorter has done our work for less than half of what it would cost to have it done by any other method that we could use and in less than half the time that would have been required by any other method.

Your slogan, "IT SERVES YOU RIGHT" is certainly borne out by performances of the Austin Rip-Snorter

Yours very truly,
J. H. VOGT.



*What the Rip-Snorter has done for Marathon County it will do for you.
Special Rip-Snorter Bulletin X tells the whole story. Ask us for one.*

The Austin-Western Road Machinery Co.

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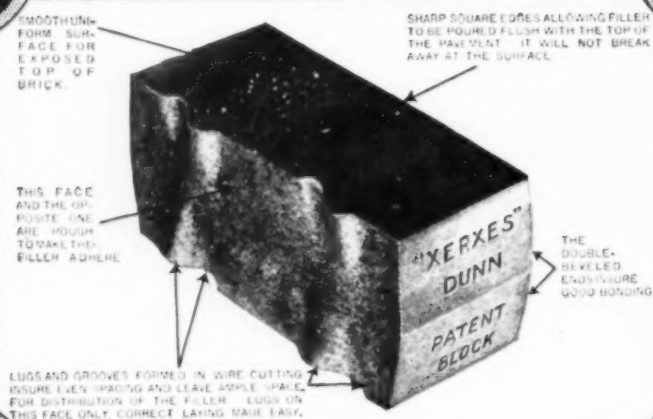
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WIRE-CUT LUG BRICK



A Wire-Cut Lug Hillside
Brick



End View—Two Wire-Cut
Lug Brick—Note joint spacing

ONE BILLION SIXTY-FOUR MILLION NOW IN SERVICE IN STREETS AND HIGHWAYS THROUGHOUT THE UNITED STATES AND CANADA

Scientifically designed to meet the requirements of exacting engineers.

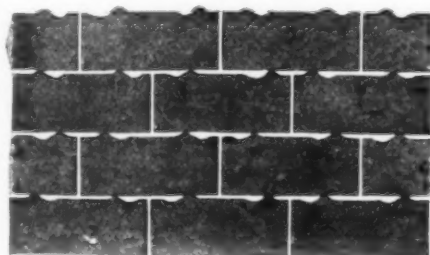
Costs no more per square yard than ordinary brick.

Made in all standard sizes by reputable and progressive manufacturers everywhere.

THE
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CHATTANOOGA, TENN.

SAYS:

"WE have laid several millions of wire-cut lug bricks and have a high opinion of them. Our experience has demonstrated that it is possible to get a better bond, a more even surface and a stronger pavement with wire-cut lug brick than with other brick."



Alignment of Wire-Cut Lug Brick in Courses,
Showing Uniform Spacing for Filler.

Uniform spacing requires wire-cut lug brick. This is imperative with either bituminous or cement filler.

A wire-cut lug brick pavement is the pride of its builder.

Ask for list of competing manufacturers in your territory.

THE DUNN WIRE-CUT LUG BRICK CO.

LICENSORS CONNEAUT, O.